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Species of *Rhytismataceae* on *Lithocarpus* spp. from Mt Huangshan, China

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Abstract—Seven members of the *Rhytismataceae* are reported from leaves of tanoaks from Mt Huangshan, China. Among them *Coccomyces mucronatoides* and *Terriera coacervata* are new species, *Terriera illiciicola* is a new combination, and the other species are already known for China. This paper provides descriptions, discussions for these species as well as a dichotomous key for the eight rhytismataceous species known to occur on tanoaks worldwide.

Key words—*Rhytismatales*, morphology, taxonomy, *Fagaceae*

Introduction

Worldwide, at least 55 genera (+ 30 synonyms) and 728 species of *Rhytismataceae* have been reported (Kirk et al. 2008). These fungi are parasites on leaves, stems, twigs, or fruits of gymnosperms, angiosperms and pteridophytes or saprobes on plant residues. More than 240 different fungi have been discovered on *Lithocarpus* spp. (*Fagaceae*), but records of the *Rhytismataceae* are few (Farr & Rossman 2011). *Coccomyces dentatus* (J.C. Schmidt & Kunze) Sacc. on *Lithocarpus densiflorus* (Hook. & Arn.) Rehd. is known from the USA (Sherwood 1980), and five *Rhytismataceae* species —*C. delta*, *C. huangshanensis*, *C. mucronatus*, *Lophodermium agathidis*, *L. illiciicola*— have been reported on *Lithocarpus* spp. from China (Lin et al. 2000a,b, 2001, 2005; Wang et al. 2006).

Mt Huangshan in southern Anhui Province is suitable for many rhytismataceous species because of the warm climate, abundant rainfall, and high plant diversity. Seven species representing three different genera on *Lithocarpus* leaves are described from Mt Huangshan in this paper, including two new species, one new combination, and four species already known in China.

Materials & methods

Leaves with bleached spots were collected from plants on Mt Huangshan, and those with open fruit bodies characteristic of *Rhytismataceae* were selected. Observations of the external shape, size, color, opening mechanisms of ascomata and conidiomata, and zone line characteristics were made using a stereoscope with 10–50× magnification.

Microscopic preparations were made in water, Melzer's reagent, 5% KOH, or 0.1% (w/v) cotton blue in lactic acid. For observing the outlines of ascomata and conidiomata, vertical sections were mounted in lactic acid or cotton blue with water pretreatment. Gelatinous sheaths surrounding ascospores and paraphyses were observed in water or cotton blue in lactic acid. The color of structures and ascospore contents were observed in water. Measurements and drawings of asci, ascospores, and paraphyses were made from material mounted in 5% KOH or Melzer's reagent from 30 ascospores, asci and paraphyses for each specimen. Point and line integrated illustrations of external shapes and internal structures of the fruit bodies were drawn using a Panasoianic XSJ-2 microscopic painting device.

Taxonomy

Coccomyces delta (Kunze) Sacc., Boletím da Sociedade Broteriana 11: 13, 1893
≡ *Phacidium delta* Kunze, Linnaea 5: 551, 1830

Type: **MADEIRA**, on leaves of *Lauraceae*. [Without further data.]

Zone lines frequent, black, thin, surrounding the bleached spots.

Conidiomata not observed.

Ascomata on both sides of leaves, scattered in irregular, yellow-brown bleached spots. In surface view, ascomata (700–)1000–1600(–1800) μm diam., triangular or quadrangular, black, shiny, slightly raising the substratum surface, opening by 3–4 radial splits. Lips present. In median vertical section, ascomata intraepidermal. Covering stroma up to 25–28 μm thick near the opening, black to dark-brown, becoming thinner or firstly thickening then becoming thinner towards the edge, composed of textura globulosa or angularis with cells 4–7 μm diam. Lip cells fringed, 1.5–2.2 μm diam., immersed in a gel. Basal stroma slightly hollow or flat, 4.0–6.5 μm thick, dark-brown, composed of textura globulosa or angularis with cells, connecting to the covering stroma. Internal matrix stroma only between the covering stroma and basal stroma. Subhymenium 15–20 μm thick, consisting of textura intricata and porrecta. Paraphyses 100–130 × 1.5–2.0 μm, filiform, aseptate, gradually swollen to 2.2–3.0 μm above, covered in a thin mucous coating. Asci ripening sequentially, 85–120 × 7.5–9.5(–11) μm, cylindric-clavate or subclavate, somewhat long-stalked, apex thin-walled, J–, 8-spored. Ascospores fasciculate, 52–85 × 1.5–1.8(–2.0) μm, filiform, hyaline, aseptate, with a ca 1 μm thick gelatinous sheath.

Illustration: Sherwood (1980: Fig. 18).

Ecology & distribution: Ascomata found on fallen or not yet fallen diseased leaves. Widely distributed in Europe (Sherwood 1980). In China, it is known from southern parts (Lin et al. 2000a).

Specimens examined: On *Lithocarpus glaber* (Thunb.) Nakai: **China**, **Anhui**, Mt Huangshan, alt. ca 550 m, 11 August 1995, S.M. Yu, Y.R. Lin 1596a (AAUF 67794a); Ciguangge, alt. ca 800 m, 4 October 2009, Q. Zheng, S.J. Wang 5436 (AAUF 71544).

Comments—The species was originally described from Madeira, and mainly occurs on plants of the *Lauraceae* and evergreen *Quercus* (Sherwood 1980). Teng (1934) first reported *C. delta* from China. According to our observation, it infects living leaves at early stage, and may be followed by other *Coccomyces* species as the ascomata mature. Compared with the polygonal species in the genus, *C. delta* ascomata are the largest. The asci and ascospores in the Mt Huangshan specimens are shorter than described by Sherwood (1980).

Coccomyces huangshanensis Y.R. Lin & Z.Z. Li, Mycosystema 19: 449, 2000

Type: **China**, **Anhui**, Mt. Huangshan, Songgu'an, alt. ca 600 m, on *Cyclobalanopsis glauca* (Thunb.) Oerst., 9 August 1995, Y.R. Lin & S.M. Yu 1632 (AAUF 67740).

Zone lines frequent, black-brown, thin, surrounding the bleached areas.

Conidiomata with a distribution on the leaf similar to that of the ascomata. In surface view, conidiomata 180–330 × 150–260 μm, subcircular or elliptical, brown in the centre and at the perimeter line of the conidioma, concolorous with the substratum surface or light grey-brown over the rest of the appearance, slightly raising the surface of the leaf. In vertical section, conidiomata intraepidermal, double lens-shaped. Upper wall very thin, brown to dark-brown, with an indefinite structure. Basal wall 4–7 μm thick, brown, composed of thick-walled, angular cells. Conidiogenous cells 5.5–9.0 × 1.5–2.0 μm, flask-shape, holoblastic sympodially proliferating. Conidia 3.5–5.0 × ca 0.8 μm, bacilliform, hyaline, aseptate.

Ascomata on both sides of leaves, more on the upper side of the leaf, scattered in irregular bleached spots. In surface view, ascomata 700–1100 μm diam., triangular or quadrangular, black-brown, slightly raising the substratum surface, opening by 3–4 radial splits. Lips present at least in the early stages. In median vertical section, ascomata intraepidermal. Covering stroma 15–18 μm thick near the opening, becoming thinner towards the edge, extending to the basal stroma, consisting of brown to dark-brown textura angularis with cells 3.5–6.5 μm diam. The opening often covered by the heavily carbonized tissue. Lip cells tend to disappear as the ascomata mature. Periphysoids present. Basal stroma 8–12 μm thick, dark-brown, consisting of textura angularis or globulosa with cells 5.5–8 μm diam. Internal matrix stroma only between covering stroma and basal stroma. Excipulum 22–30 μm thick, arising from the inner layer of the covering stroma. Subhymenium 10–18 μm thick,

consisting of textura porrecta. Paraphyses 110–135 × 1.5–2.0 μm, filiform, septate, slightly swollen at the apex. Asci ripening sequentially, 85–115 × 6.0–7.0 μm, cylindrical, short-stalked, apex obtuse, thin-walled, J–, 8-spored. Ascospores fasciculate, 60–90 × 1.2–1.5 μm, filiform, hyaline, aseptate, with a thin gelatinous sheath, sometimes with a gelatinous cap at the top.

Illustration: Lin et al. (2000b: Fig. 2).

Ecology & distribution: Ascomata found on decaying leaves. Known only from China (Lin et al. 2000b).

Specimens examined: On *Lithocarpus henryi* (Seemen) Rehder & E.H. Wilson: **China**, **Anhui**, Mt Huangshan, Tangkou, alt. ca 500 m, 29 September 1993, Y.R. Lin, L. Chen 1511a (AAUF 67619a); 2 October 2009, Q. Zheng, X.M. Gao 5389 (AAUF 71497).

Comments—*Coccomyces limitatus* (Berk. & M.A. Curtis) Sacc. is very similar to this species but differs in the well developed internal matrix of the stroma, 50 μm thick excipulum, and dissimilar asci and ascospores. Its asci are 4.0–5.6 μm wide, and the ascospores are only 0.8–1.0 μm wide (Sherwood 1980; Johnston 1986).

Coccomyces mucronatus Korf & W.Y. Zhuang, Mycotaxon 22: 487, 1985

Type: **China**, **Sichuan**, Mt Qingcheng, alt. ca 900 m, on *Castanopsis* sp., 6 July 1983, W.Y. Zhuang HMAS 450558 (CUP-CH 2484).

Zone lines frequent, black-brown to black, thin, surrounding or separating the bleached spots.

Conidiomata not observed.

Ascomata on both sides of leaves, scattered in irregular, grey-yellow bleached spots. In surface view, ascomata 650–1200 μm diam., polygonal to subcircular, black-brown to black, slightly raising the substratum surface, opening by radial splits. Lips absent. In median vertical section, ascomata intraepidermal to subepidermal. Covering stroma 15–22 μm thick, consisting of grey-brown to dark-brown textura angularis and globulosa with cells 3.5–7 μm diam., extending to the basal stroma. Periphysoids, 8–15 × 2.0–3.0 μm, cylindrical, hyaline, 0–3 septate. Basal stroma 8–12 μm thick, composed of dark-brown textura angularis and globulose. Internal matrix stroma poorly developed, 10–20 μm thick in the center, hyaline, consisting of gelatinous textura intricata. Excipulum 40–70 μm thick in the upper, abruptly thinner towards the base, arising from the inner layer of the covering stroma. Subhymenium 15–20 μm thick, composed of colourless textura porrecta or angularis. Paraphyses 110–140 × 2.0–2.5 μm, filiform, abruptly enlarged to 4.5–5.5 μm and subfusoid-ventricose above, with a 2.5–6.0 × 1.0–2.0 μm, subcylindrical mucro at the apex, often agglutinated. Asci ripening sequentially, 104–119 × 4.2–5.0 μm, cylindrical, short-stalked, apex round to obtuse, thin-walled, J–, 8-spored. Ascospores fasciculate, 60–86 × 0.6–0.8 μm, filiform, hyaline, aseptate, with an indefinite gelatinous sheath.

Illustration: Korf & Zhuang (1985: Fig. 2).

Ecology & distribution: Ascomata found on decaying leaves. Widely distributed in Indonesia (Korf & Zhuang 1985). In China, it is known from Sichuan and Anhui provinces (Lin et al. 2001).

Specimens examined: On *Lithocarpus glaber*: **China**, **Anhui**, Mt Huangshan, Tangkou, alt. ca 550 m, 11 August 1995, Y.R. Lin, L. Chen 1596b (AAUF 67704b). On *L. henryi*: **China**, **Anhui**, Mt Huangshan, Tangkou, alt. ca 550m, 29 September 1993, Y.R. Lin et al. 1511b (AAUF 67619b); Taoyuanting, alt. ca 650 m, 10 June 1994, Y.R. Lin, S.M. Yu 1569a (AAUF 67677a); Wenquan, alt. ca 700 m, 3 October 2009, Q. Zheng, X.M. Gao 5411 (AAUF 71519).

Comments— Korf & Zhuang (1985) first described *C. mucronatus* based on specimens on fallen leaves of *Castanopsis* sp. from Sichuan in China and Java in Indonesia. The Mt Huangshan specimens usually produce fruit bodies on decaying fallen leaves or leaf fragments, suggesting that the species is not implicated in any plant disease. The other features of this species agree with those of the type specimen described by Korf & Zhuang (1985), except for the inlaid depth of the ascomata and the growth pattern of the excipulum.

Coccomyces mucronatoides Y.R. Lin, Q. Zheng & S.M. Yu, **sp. nov.** Figs. 1–6

MycoBank MB561883

Ascomata (480–)600–1100 µm, trigona usque ad hexagona, flavo-brunnea, subepidermalia. Periphysoidei rarissimi. Excipulum 10–15µm crassum, ex hyphis hyalinis septatis parallelis constatum. Paraphyses filiformes, apice abrupte tumidae. Asci 85–120 × 4.5–5.0µm, cylindrico-clavati. Ascosporae 70–105 × 0.8–1.0 µm, filiformes, hyalinae, vagina gelatinosa tenui indutae.

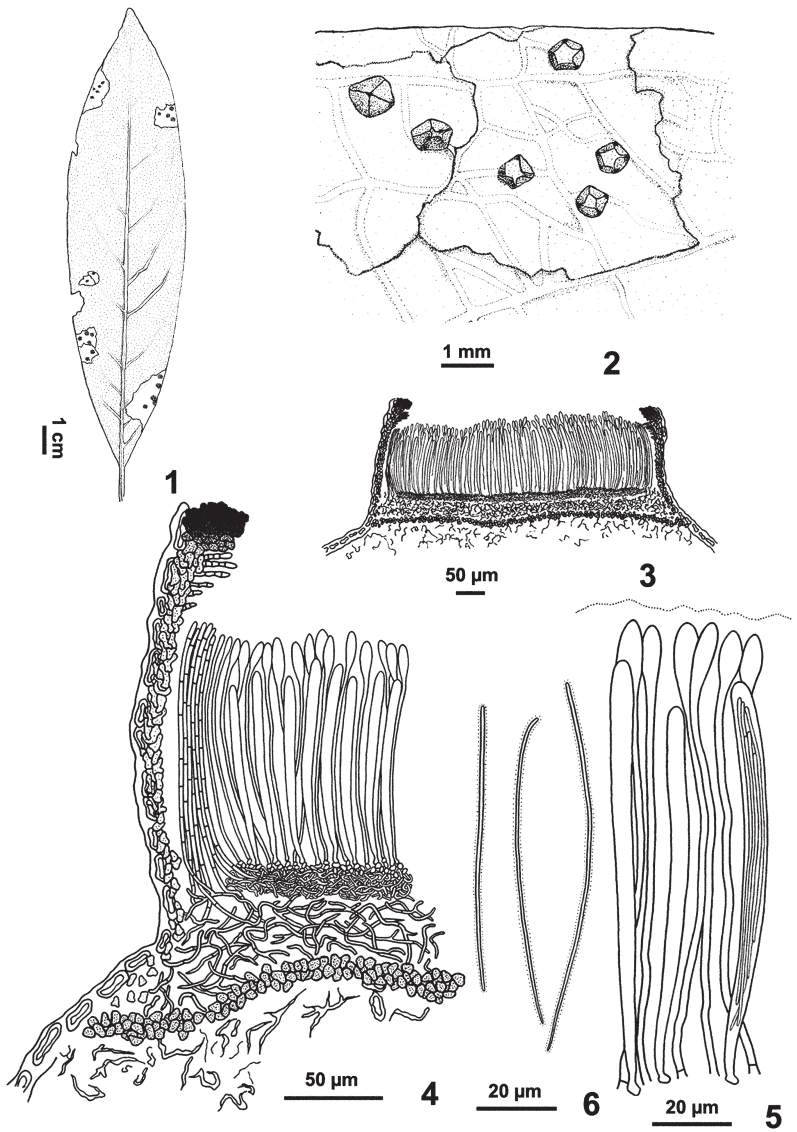
Type: China, Anhui, Mt Huangshan, Tangkou, alt. ca 550 m, on *Lithocarpus cleistocarpus* (Seemen) Rehder & E.H. Wilson, 11 September 2007, S.J. Wang, Y.R. Lin 2244b (**Holotype**, AAUF 68352b).

Etymology: referring to the similarity of the paraphysis apex to *Coccomyces mucronatus* in shape.

Zone lines somewhat frequent, black-brown or yellow-brown, thin, surrounding the bleached spots.

Conidiomata not observed.

Ascomata developing on both sides of leaves, more on the upper side of the leaf, scattered in irregular, yellowish-white or yellowish beached spots. In surface view, ascomata (480–)600–1100 µm diam., triangular to hexagonal, yellow-brown, not shiny, with a clearly defined edge, somewhat raising the substratum surface and flattened or slightly concave in the central region, with an obvious preformed dehiscence mechanism, opening by 3–6 radial splits, which extend nearly to the edge of ascoma, to expose the sallow hymenium. Lips absent. In median vertical section, ascomata subepidermal. Covering stroma 25–32 µm thick near the opening and 8–15 µm thick in other parts, composed of an upper part of textura globulosa with black-brown cells 5–6 µm



Figs. 1–6. *Coccomyces mucronatoides* on *Lithocarpus cleistocarpus* (from holotype). 1. A leaf bearing ascomata. 2. Ascomata as seen under a dissecting microscope. 3. Ascoma in median vertical section. 4. Detail of ascoma in median vertical section. 5. Paraphyses and asci. 6. Discharged ascospores.

diam., an lower part of textura epidermoidea with dark-brown cells 3.0–4.5 μm diam., and a few yellowish angular cells almost connecting to the basal stroma. Periphysoids extremely sparse, (5–)8–15 × 2.0–2.5 μm, cylindrical, hyaline, (1–)3–5 septate. Basal stroma moderately developed, 10–15(–18) μm thick, composed of black-brown textura angularis or globulosa with thick-walled cells 5–7 μm diam. Internal matrix stroma well developed, 20–30(–45) μm thick, consisting of hyaline, gelatinised textura intricata. Excipulum 10–15 μm wide, composed of rows of hyaline, septate, thin-walled, parallel hyphae. Subhymenium 15–22 μm thick, composed of hyaline textura intricata and angularis. Paraphyses 100–140 × 1.8–2.0 μm, filiform, aseptate, abruptly enlarged to 4.0–6.0 μm and elliptical or subfusoid near the apex, cemented in a thin gel, forming an epithecium 15–20 μm thick. Asci ripening sequentially, 85–120 × 4.5–5.0 μm, cylindrical, stalked, apex round to obtuse, thin-walled, J–, 8-spored. Ascospores arranged in a fascicle, 70–105 × 0.8–1.0 μm, filiform, hyaline, aseptate, with a thin gelatinous sheath.

Ecology & distribution: Ascomata found on dead leaves in litter. Known only from the type locality.

Comments—According to the type descriptions, *C. mucronatus* differs from the new species in frequent periphysoids, poorly developed internal matrix that occurs only between covering stroma and basal stroma, and paraphyses with an abruptly swollen subfusoid-ventricose upper part with a mucro at the tip (Korf & Zhuang 1985). *Coccomyces mucronatus* on *Lithocarpus* spp. observed by the authors differs from *C. mucronatoides* in an excipulum arising from the inner layers of covering stroma, with 1–2 dark-brown, swollen cells at the apex. However, the ascomata of the new species from Mt Huangshan have few periphysoids, a well-developed internal matrix, and non-mucronate paraphyses with a suddenly enlarged elliptical or subfusoid body near the apex.

Lophodermium agathidis Minter & Hettige, New Zealand Journal of Botany 21: 39, 1983

Type: **NEW ZEALAND**, **Auckland**, Waitakere Ranges, Oratia, Kelly's Bush, on *Agathis australis* (D. Don) Lindl. ex Loudon, 10 November 1979, G. Hettige 259066 (IMI).

Zone lines usually frequent, surrounding the bleached spots.

Conidiomata with a distribution on the leaf similar to that of the ascomata, scattered to crowded. In surface view, conidiomata 140–300 μm diam., somewhat round, black-brown in the centre and at the perimeter line of the conidioma, concolorous with the substratum surface elsewhere, or grey-brown to black-brown as a whole. In vertical section, conidiomata subepidermal. Upper wall 4–7 μm thick, dark-brown, consisting of thick-walled angular cells 2–4 diam. Basal wall brown to dark-brown, composed of 1–2 layers of

thin-walled angular cells 3–5 μm diam. Subconidiogenous layer 7–10 μm thick, consisting of thick-walled angular cells. Conidiogenous cells 10–16 × 2.0–3.0 μm, flask-shape, proliferating sympodially. Conidia 3.0–4.0 × ca 1.0 μm, elliptical, hyaline, aseptate.

Ascomata on both sides of leaves scattered in irregular, yellow-brown bleached spots. In surface view, ascomata 800–1900(–2300) × 390–650 μm, elliptical to elongate-elliptical, black, slightly raising the substratum surface, opening by a longitudinal split. Lips light reddish-brown. In median vertical section, ascomata subepidermal. Covering stroma consisting of thick-walled aliform-angular cells 3–7 μm diam., 55–70 μm thick and heavily carbonized near the opening, other parts dark-brown, becoming suddenly thinner towards the edge. Lip cells arranged in a subparallel manner or slightly radially, cylindrical. Basal stroma 6–10 μm thick, dark-brown, consisting of thick-walled aliform-angular cells 4–7 μm diam. Subhymenium ca 12 μm thick, hyaline, composed of angular cells. Paraphyses 110–160 × 1.5–2.0 μm, filiform, irregularly swollen to 2.0–3.0 μm or occasionally branched above, covered with a mucous coating. Asci maturing sequentially, 100–145 × 6–7.5 μm, cylindrical, short-stalked, apex round, thin-walled, J–, 8-spored. Ascospores arranged in fascicles sometimes helically coiled, 70–95 × 1.2–1.6 μm, filiform, hyaline, 0–1-septate, enveloped in a ca 0.5 μm thick gelatinous sheath.

Illustration: Minter & Hettige (1983: Figs. 1–9).

Ecology & distribution: Ascomata found on dead leaves in litter. Widely distributed in China (Lin et al. 2005), Malaysia (Spooner 1991) and New Zealand (Johnston 2001).

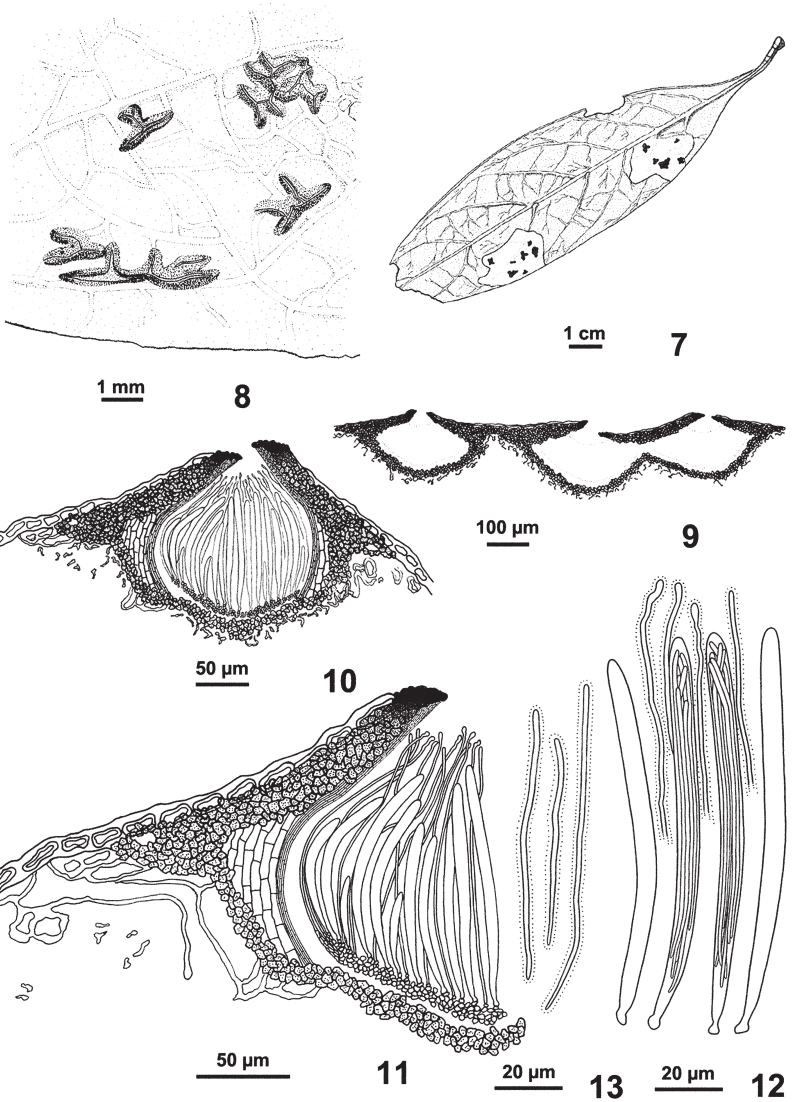
Specimens examined: On *Lithocarpus glaber*: **China**, **Anhui**, Mt Huangshan, Tangkou, alt. ca 550 m, 5 April 1994, Y.R. Lin et al. 1655 (AAUF 67763). On *L. henryi*: **China**, **Anhui**, Mt Huangshan, Tangkou, alt. ca 550 m, 2 October 2009, Q. Zheng, X.M. Gao 5385 (AAUF 71493).

Comments—*Lophodermium agathidis* occurs on a wide range of gymnosperms and angiosperms (Minter & Hettige 1983; Johnston 1989a, 2001). Minter & Hettige (1983) inferred that it is probably a leaf endobiont inhabiting apparently healthy leaves that fruits only after death of the leaf from some other cause. After examination of specimens from China, Lin et al. (2005) found that on leaves of different plants, *L. agathidis* differs in thickness of the covering stroma, location of the lip cells, and size of asci and ascospores.

Terriera coacervata Y.R. Lin & Q. Zheng, **sp. nov.** Figs. 7–13

MycoBank MB561884

Ascomata coalescentia. Singula ascomata (650–)1000–1800(–2200) × 350–560 μm, plerumque elliptica, subepidermalia. Extentio valde carbonacea ad apicem stromatis tegentis affixa. Excipulum maxime debiliter evolutum. Paraphyses filiformes. Asci 90–130



Figs. 7–13. *Terriera coacervata* on *Lithocarpus cleistocarpus* (from holotype). 7. A leaf bearing ascomata. 8. Ascomata as seen under a dissecting microscope. 9. Three coalescent ascomata in median vertical section. 10. Ascoma in median vertical section. 11. Detail of ascoma in median vertical section. 12. Paraphyses and asci. 13. Discharged ascospores.

× 6.0–7.0 µm, cylindrici. Ascosporae 60–110 × 1.5–1.8 µm, filiformes, hyalinae, vagina gelatinosa indutae.

Type: China, Anhui, Mt Huangshan, Tangkou, alt. ca 550 m, on leaves of *Lithocarpus cleistocarpus*, 11 September 2007, S.J. Wang, Y.R. Lin 2244a (**Holotype**, AAUF 68352a).

Etymology: referring to the coalescent form of the ascomata.

Zone lines infrequent, thin, grey-brown to brown, sometimes not defined, surrounding or partly surrounding the bleached spots.

Conidiomata absent.

Ascomata developing on lower side of leaves, 2–9 ascomata coalescent in irregular, yellowish bleached spots 15–25 µm diam. In surface view, ascomata interlaced or accumulatively coalescent, forming multilocular fruit bodies. Single ascomata (650–)1000–1800(–2200) × 350–560 µm, elliptical, sometimes branching into lobed or polygonal shapes, black, slightly shiny, markedly raising the substratum surface, opening by a longitudinal split more than 4/5 the length of the ascoma or by not less than 3 lobes. Lips absent. In median vertical section, ascomata subepidermal with epidermal cells becoming filled with fungal tissue as ascomata develop. Covering stroma 20–30 µm thick, composed of black-brown textura angularis-globulosa with thick-walled cells. Along the edge of the ascoma opening, there is a short extension, about 12 µm thick, adjacent to the covering stroma, which is comprised of strongly carbonized tissue with no obvious cellular structure. Basal stroma strongly concave, 10–18 µm thick, composed of 3–4 layers of black-brown, angular and globose cells 2.8–4.0 µm diam., extending to the covering stroma. Colorless to light grey-brown textura prismatica 10–22 µm thick exists between the covering stroma and basal stroma. Excipulum very poorly developed, arising from the inner layer of the basal stroma, consisting of hyaline textura porrecta. Subhymenium 8–12 µm thick, composed of hyaline textura angularis. Paraphyses 120–160 × 1.4–1.6 µm, filiform, usually gradually swollen to ca 2.0 µm at the apex, not branched, covered with a ca 0.8 µm thick mucous coating. Asci maturing sequentially, 90–130 × 6.0–7.0 µm, cylindrical, short-stalked, apex round, J–, 8-spored. Ascospores arranged in a fascicle or helically coiled, 60–110 × 1.5–1.8 µm, filiform, hyaline, aseptate, enveloped in a 1.0–1.5 µm thick gelatinous sheath.

Ecology & distribution: Ascomata found on dead or fallen leaves and known only from the type locality.

Comments—This new species has characteristics typical of *Terriera*. In each ascoma, there is a flattened extension comprising strongly carbonized tissue adjacent to the covering stroma along the edge of the ascomatal opening, a very poorly developed hyaline textura porrecta excipulum, and a colorless to light grey-brown textura prismatica between the covering stroma and basal stroma.

Terriera coacervata is unusual and unique in the genus because its ascomata usually interlace or accumulatively coalesce to form multilocular fruit bodies.

Lophodermium euryae Y.R. Lin & Y.F. He differs from *T. coacervata* in a different coalescent form, the oblong, elliptical or broadly elliptical smaller ascomata (290–650(–870) × 250–350 μm), smaller ascospores (45–70 × 0.8–1.2 μm), paraphyses with suddenly swollen to subglobose apices branched to form an epithecium, and the abundant conidiomata (Lin et al. 2005).

We discovered a hyperparasite — the anamorphic fungus, *Cladosporium lophodermii* Georgescu & Tutunaru — in some *T. coacervata* collections that infects ascomata to produce dark-brown hyphae and conidia in the interior. Hyperparasitism is frequent in some *Lophodermium* taxa (Minter 1981; Lin 1989).

Terriera illiciicola (S.J. Wang, Y.F. He & Y.R. Lin) Q. Zheng & Y.R. Lin, **comb. nov.**
MycoBank MB561885

≡ *Lophodermium illiciicola* S.J. Wang, Y.F. He & Y.R. Lin, Mycosystema 25: 1, 2006.

Type: **China**, **Anhui**, Mt Huangshan, Tangkou,, alt. ca 550 m, on *Illicium verum* Hook. f., 25 September 2004, Y.R. Lin et al. 1912 (AAUF 67683).

Zone lines frequent, black, thin, surrounding or partly surrounding the bleached spots.

Conidiomata absent.

Ascomata developing on the upper side of leaves, crowded in yellowish to yellow-brown bleached spots. In surface view, ascomata 300–380 × 280–330 μm, subcircular to broad-elliptical, black, shiny, with a clearly defined edge, moderately raising the surface of the substratum, opening by a longitudinal split. Lips absent. In median vertical section, ascomata subepidermal. Covering stroma 25–30 μm thick, consisting of black-brown textura angularis with cells 4.5–6.5 μm diam. Along the edge of the ascomatal opening, there is an extension, about 15 μm thick, adjacent to the covering stroma, which is comprised of strongly carbonized tissue with no obvious cellular structure and tends to disappear as the ascomata mature. Basal stroma concave and cup-shaped, 12–18 μm thick, consisting of black-brown textura angularis with 2(–3) layers of cells 5.0–7.5 μm diam., extending to the covering stroma. Colorless or light brown textura prismatica 15–20 μm thick exists between the covering and basal stromata. Subhymenium 12–15 μm thick, consisting of textura angularis-porrecta. Paraphyses 115–150 × 1.0–1.5 μm, filiform, the top not swollen or branched, covered with an inconspicuous mucous coating. Asci maturing sequentially, 90–135 × 4.0–5.0 μm, narrow-cylindrical or cylindric-clavate, long-stalked, apex round, J–, 8-spored. Ascospores fasciculate, 65–95 × ca 1.0 μm, filiform, hyaline, aseptate, enveloped in an inconspicuous gelatinous sheath.

Illustration: Wang et al. (2006: Fig. 1).

Ecology & distribution: Ascomata found on fallen leaves and known only in China (Wang et al. 2006).

Specimens examined: On *Lithocarpus cleistocarpus*: **China**, **Anhui**, Mt Huangshan, Shibawan, alt. ca 1000 m, 22 September 2004, S.J. Wang, Y.F. He, Y.R. Lin 1806 (AAUF 67914).

Comments—This species was originally described as *Lophodermium illiciicola* (Wang et al. 2006) and is transferred here because its diagnostic characteristics agree with those of the genus *Terriera*. The species resembles *T. minor* (Tehon) P.R. Johnst. (Ortiz-García et al. 2003), which can be differentiated by oblong or elliptical larger ascomata (320–800(–1400) × 220–340 µm), a flat basal stroma, and paraphyses that branch 2–3 times at the top, sometimes forming an epithecium (Johnston 1988, 1989b; Lin et al. 2005).

Key to species of the *Rhytismataceae* on *Lithocarpus* spp. worldwide

1a. Ascomata polygonal, opening by radial splits **2**
1b. Ascomata more or less elliptical or round, opening by a longitudinal split **6**

2a. Lip cells present at least at the early stage **3**
2b. Lip cells absent **4**

3a. Ascomata 700–1100 µm diam., with periphysoids ..... ***C. huangshanensis***
3b. Ascomata (700–)1000–1600(–1800) µm diam., without periphysoids .... ***C. delta***

4a. Paraphyses gradually swollen at apex ..... ***C. dentatus***
4b. Paraphyses suddenly swollen at apex **5**

5a. Paraphyses swollen to subfusoid-ventricose above, with a subcylindrical mucro at apex ..... ***C. mucronatus***
5b. Paraphyses swollen to elliptical or subfusoid above, without a mucro at apex ..... ***C. mucronatoides***

6a. Top of covering stroma with a flattened, strongly carbonized extension **7**
6b. Top of covering stroma without an extension ..... ***L. agathidis***

7a. Ascomata interlaced or accumulatively coalescent; paraphyses gradually swollen above ..... ***T. coacervata***
7b. Ascomata crowded; paraphyses not swollen above ..... ***T. illiciicola***

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